

**AMPEX**

# TBC-800 Digital Time Base Corrector





# TBC-800



## Ampex TBC-800 Digital Time Base Corrector

A FOURTH GENERATION TIME BASE CORRECTOR FROM AMPEX—WITH ALL THE INHERENT ADVANTAGES OF A DIGITAL SYSTEM—FOR THE BEST QUALITY HELICAL SCAN COLOR OR MONOCHROME PLAYBACK YET.

Here, in an unassuming "black box," is the potential for a wide range of new opportunities for helical-scan videotape recorders. Thanks to digital technology applied to time base correction, some constraints have been lifted, giving the helical VTR user far more latitude in a variety of applications.

For some time, analog time base correctors have been used with some of the more sophisticated helical machines to produce a video playback signal that meets FCC and CCIR specifications for broadcasting. Digital time base correction offers a similar benefit, but also offers it to a wider range of VTRs, because it allows a much wider "window" of correction; two full horizontal lines in NTSC, one full horizontal line in PAL/SECAM.

### NEW USES FOR MORE VTRs

This new digital time base corrector from Ampex can be used with capstan-servoed helical VTRs such as Ampex models VPR-7900/7903 and VPR-7950A. In addition, the wide correction window allows it to be used with recorders such as the Ampex VPR-5800/5803.

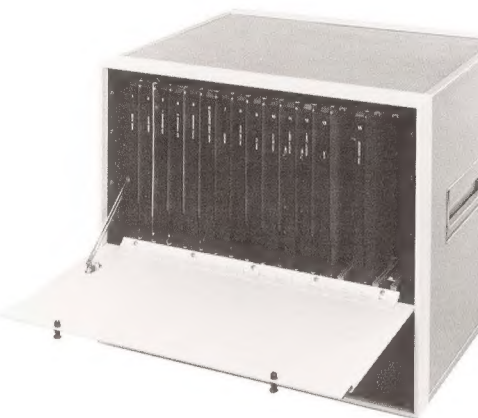
Broadcasters, teleproduction studios, CATV operators, and CCTV users in education, industry and other fields can now take increased advantage of the economies offered by helical VTRs, in program origination, post-production, and duplication, and improve the quality of their product at the same time.

Regardless of the application in which VTR with the TBC-800 is used, the benefits are immediate and apparent. In playback, picture stability is equal to that of the finest quadruplex VTRs, free of vertical jitter and hooking. The output signal can be mixed, distributed, and used like a camera signal. Edits can be made cleanly, and all kinds of special effects, fades, and lap dissolves can be

base stability. The TBC-800 cannot alter the quality of the recorded video signals. However, during playback it very efficiently compensates for timing errors that may be introduced into the recording process by the electromechanical components of the recorder.

### DESIGNED FOR CONVENIENCE

Two versions of the TBC-800 are available: a stand-alone 24 $\frac{3}{4}$ " wide x 13" high x 18 $\frac{1}{16}$ " deep, and a rack-mount version. Either version requires only a single connection from the video output of the recorder. On most machines, no feedback "centering" signal to the VTR is re-



quired. Where a feedback signal is required (e.g. VPR-5803), an interface kit is available.

The TBC-800 presents a wide correction window while its color output stability is  $\pm 2.5$  nanosec, well within the FCC-CCIR broadcast specification. TBC-800 signal-to-noise ratio is superior to any competitive product. The Velocity Compensator

burst on the signal is used in the encoding process. Whether color or monochrome, output decoding is synchronous with the station references.

Included as standard elements of the TBC-800 are the following:

### Sync Generator

The Sync Generator supplies sync signals for the Time Base Corrector when external sync is not available, or it can be "Gen-Locked" to a station sync generator.

### Dropout Compensator

The Dropout Compensator eliminates the effects of dropouts in recorded color or monochrome video signals. When a dropout occurs, luminance and chrominance information from the previous line is re-routed through a unique shift register in the system to replace the missing information.

A separate feed from the VTR is required to supply the necessary dropout pulse to the Time Base Corrector.

### OPTIONAL ACCESSORIES

#### Sync Pulse Driver\*

Whenever the Sync Generator (see above) is used to provide "station sync" to other equipment besides the TBC-800, the optional Sync Pulse Driver is required. The Sync Pulse Driver provides pulses at standard level to drive the other equipment.

#### Velocity Compensator

Mechanical differences between recorders will result in playback timing errors. To correct these errors, the Velocity Compensator compares the burst phase of each video line on the tape with the burst phase of the next line, then generates a correction signal. This further improves the capability of producing color dubs

cutted professionally. The high-quality signal allows dubbing to quad recorders or to  $\frac{3}{4}$ -inch and  $\frac{1}{2}$ -inch recorders with equal ease, and likewise permits multi-generation dubbing and transfers to film.

Color quality is, of course, largely dependent upon factors other than time

accessory (described below) is the finest available in a time base corrector.

The basic TBC system processes either monochrome or color signals. The monochrome signal is "assigned" a synthetic color burst, which is used for digital encoding of the signal. In color, the actual

of excellent quality through several generations.

### FCC/CCIR Sync Standard

Plug-in crystal oscillator allows Sync Generator to meet FCC or CCIR standards for both short- and long-term sync stability.

\*Not available in PAL/SECAM



# PERFORMANCE SPECIFICATIONS

## GENERAL

SIZE: Portable Case:  
Rack Mount:  
WEIGHT: Portable Case:  
Rack Mount:  
POWER REQUIREMENTS:  
AMBIENT OPERATING  
CONDITIONS:  
Temperature:  
Humidity:

## NTSC

24 $\frac{3}{4}$ " W x 13" H x 18 $\frac{1}{16}$ " D  
15 $\frac{3}{4}$ " H (Std. 19" Rack Width)  
100 lbs.  
70 lbs.  
<5 Amps @ 117 VAC  
0° to 45° C  
10% to 90% RH (Non Condensing)

## PAL/SECAM

63 cm W x 33 cm H x 46 cm D  
40 cm H  
44 kg  
31 kg  
3 Amps @ 240 VAC, 50 Hz  
0° to 45° C  
10% to 90% RH (Non Condensing)

## VIDEO

BANDWIDTH:  $\pm 0.2$  dB to 4.0 MHz  
3 dB Down @ 5.5 MHz  
K-FACTOR (2T PULSE & BAR): 1%  
DIFFERENTIAL PHASE: 2° (See Note 1)  
DIFFERENTIAL GAIN: 2% (See Note 1)  
SIGNAL-TO-NOISE RATIO: 60 dB (See Note 2)  
CORRECTION RANGE: Greater than  $\pm$  one Horizontal Line  
OUTPUT JITTER:  
Monochrome:  $\pm 10$  nsec  
Color:  $\pm 2.5$  nsec  
VTR-Interface: Requires an un-processed video signal from a non-segmented helical VTR with capstan servo.  
Input Signals:  
Reference: 1.0V composite video or color black (75 ohms)  
Video: 1.0V,  $\pm 3$  dB, composite video (75 ohms)  
Dropout Compensator: Dropout pulse at TTL level (Dropout = low)  
Output Signals:  
Video (2): (a) 1.0V composite video (75 ohms)  
(b) 1.0V composite or non-composite video (75 ohms)  
Monitor: 1.0V composite video (75 ohms)  
REFERENCE (WITH PULSE DRIVER ACCESSORY):  
Sync: 4.0V  
Blanking: 4.0V  
H. Drive: 4.0V  
V. Drive: 4.0V  
Burst Key: 4.0V  
Subcarrier: 1.0V

$\pm 0.3$  dB to 5.5 MHz  
1%  
3° (See Note 1)  
3% (See Note 1)  
-56 dB (See Note 2)  
Greater than  $\pm 0.5$  Horizontal Line

## PAL

$\pm 20$  nsec  
 $\pm 3$  nsec  
(See Note 3)

## SECAM

$\pm 20$  nsec  
N/A

Requires a standard signal from any non-segmented helical VTR with capstan servo.

## PAL

1.0V composite video or color black (75 ohms)  
(Required only when Gen-Locking to TBC-800 Internal Sync Generator)  
1.0V composite video (75 ohms)  
Dropout pulse at TTL level:  
Dropout = low.

## SECAM

1.0V composite video or color black (75 ohms)  
(Required for normal SECAM operation)  
1.0V composite video (75 ohms)  
Dropout pulse at TTL level:  
Dropout = low  
(See Note 4).

NOTE 1: Defined as the degradation to the differential phase and differential gain of the input video signal. Measured with ramp and subcarrier amplitude equal to that of the color burst.

NOTE 2: VTR-TBC system signal-to-noise ratio is determined primarily by VTR performance, e.g.  
-42 dB VTR S/N = 41.3 dB System S/N -46 dB VTR S/N = 45.0 dB System S/N  
This gives an equivalent TBC S/N ratio of -56 dB.

NOTE 3: In order to meet this specification, the VTR Signal-to-Noise ratio must be 48 dB or better.

NOTE 4: In SECAM, the entire line containing the dropout is replaced by the previous line.

Amplex Corporation reserves the right to change specifications without notice and without obligation.  
These specifications supersede all previous specifications, stated or implied.

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